MARKES international

MTS-32™

Sequential sampler

Multi-tube sequential sampling

Pumped sampling onto sorbent tubes remains one of the most popular and versatile air monitoring options for trace organics in environmental health and safety applications. It is applicable to vapour-phase organic chemicals ranging in volatility from n-C_3 to n-C_{26} (depending on sorbent selection – see Application Note 005) and for vapour concentrations from low ppt to high ppm. The MTS-32 is a convenient, field-portable multi-tube sequential sampler from Markes International offering unattended sampling onto multiple tubes over time.

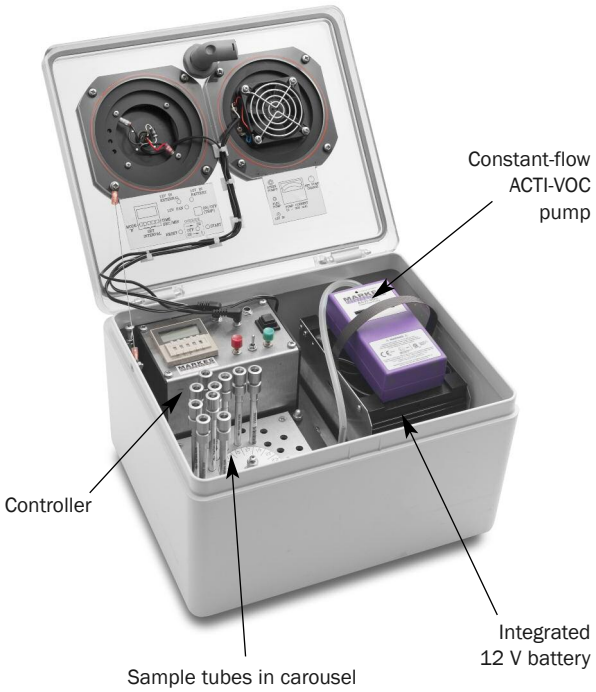
Applications for sequential sampling

The MTS-32 allows air to be pulled, sequentially, through a series of up to 32 industry-standard (3½″ long × ¼″ o.d.) sorbent tubes using constant-flow pump technology. The constant flow pump ensures that the same flow rate and volume of air is sampled onto each tube in the sequence regardless of impedance variations.

Key applications include:

- Monitoring diurnal fluctuations of benzene, 1,3-butadiene and other pollutants in ambient air, for example in Air Quality Management areas
- Continuous monitoring of emission events in industrial locations.

Sampling times (1 minute to 99 hours) and flows (5–100 mL/min) may be user-selected, but are then fixed for each tube in the sequence.



Preventing analyte ingress outside the sampling period

While outside the sampling period, sorbent tubes are sealed using Markes International patented diffusion-locking technology. This prevents both diffusive ingress of atmospheric contaminants and loss of retained volatiles from sampled tubes. The diffusion-locking technology is either configured into DiffLok™ caps (see Figure 1) for use with standard thermal desorption tubes (3½″ long × ¼″ o.d.) or incorporated inside Markes' unique SafeLok™ tubes (see Figure 2).

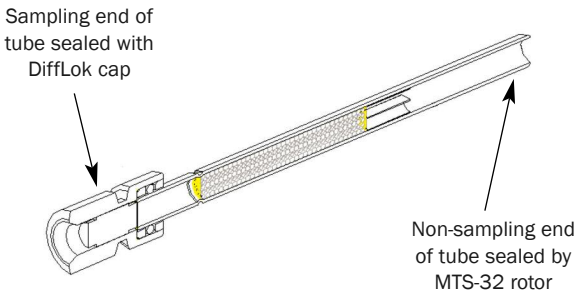


Figure 1: Schematic of a sorbent tube sealed at the sampling end with a DiffLok cap.

SafeLok tubes have the same external dimensions and sorbent capacity as standard tubes, but contain inert diffusion-locking inserts in the air space either side of the sorbent packing. They are compatible with standard tube accessories (penclips, storage caps, *etc.*),and have identical retention volume characteristics as standard tubes. However, they are not subject to diffusive ingress of contaminants or back-diffusion of retained volatiles. SafeLok tubes are an ideal complement to the MTS-32, preventing ingress of loss of volatiles when tubes are not being sampled.

Markes' diffusion-locking technology has been demonstrated to prevent both ingress of volatiles and loss of retained analytes. For more information please see the associated leaflet on SafeLok tubes.

Field portability

The MTS-32 is a stand-alone, battery-powered device housed in a compact, showerproof box. It is ideal for field monitoring applications and will operate for over 40 hours on a fully charged battery. The battery is inside the main MTS-32 box; adaptors are also available to power the MTS-32 with mains electricity. The MTS-32 is not 'intrinsically safe'. The battery or mains electricity adaptor maintains a supply of power to the ACTI-VOC™ pump as well as powering the sequential sampler itself.

The MTS-32 is constructed of low-outgassing components and incorporates a fan to ensure an air change inside the box every few seconds. This ensures that the air sampled onto the sorbent tubes accurately reflects that in the immediate environment of the sampler and also allows quantitative measurement of transients. A protective gauze acros the fan inlet prevents particulates or wildlife from entering the MTS-32 housing and disrupting the air flow.

The MTS-32 can be adapted to sample sequentially from a discrete gas or air line. Please contact Markes International to discuss your specific requirements if applicable.

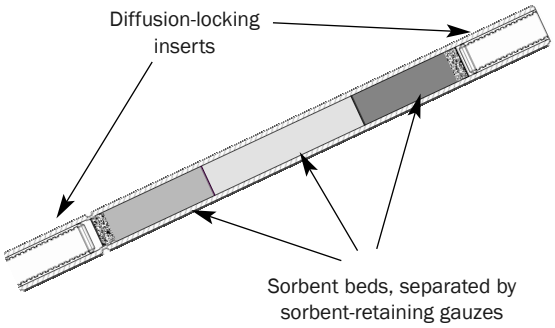


Figure 2: SafeLok sorbent tube schematic showing the diffusion-locking inserts at the ends of the tube.

Markes International is a specialist manufacturer of state-of-the-art thermal desorption instrumentation and associated air monitoring accessories. For more information on any of our instruments, accessories or consumables, please contact us.

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